

## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

- (i) APPLICANT: Mitsuahara, Ichiro  
Ohshima, Masahiro  
Ohashi, Yuko
- (ii) TITLE OF INVENTION: Pathogen-Resistant Plants and Method for  
Production Thereof
- (iii) NUMBER OF SEQUENCES: 19
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: Townsend and Townsend and Crew LLP
  - (B) STREET: Two Embarcadero Center, Eighth Floor
  - (C) CITY: San Francisco
  - (D) STATE: California
  - (E) COUNTRY: USA
  - (F) ZIP: 94111-3834
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US Not yet assigned
  - (B) FILING DATE: Not yet assigned
  - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: JP 8-068809
  - (B) FILING DATE: 25-MAR-1996
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: JP 8-187763
  - (B) FILING DATE: 17-JUL-1996
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Bastian, Kevin L.
  - (B) REGISTRATION NUMBER: 34,774
  - (C) REFERENCE/DOCKET NUMBER: 85760-000000
- (ix) TELECOMMUNICATION INFORMATION:
  - (A) TELEPHONE: (415) 576-0200
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## (2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 32 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: DNA
- (ix) FEATURE:
  - (A) NAME/KEY: -
  - (B) LOCATION: 1..32
  - (D) OTHER INFORMATION: /note= "PR-1a51 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

AGTAGAATTC TTAAACACC CTCGAGGATT TC

32

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..23
- (D) OTHER INFORMATION: /note= "SPR-1a31 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GGGCTCTGCA GGAGTGGGAT ATT

23

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 43 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..43
- (D) OTHER INFORMATION: /note= "TPR-1a51 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

ACAGCACGTG GTTAATTGAG CTCGAAACGA CCTACGTCCA TTC

43

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..21
- (D) OTHER INFORMATION: /note= "BKSBE primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

TCCCCCGGGC TGCAGGAATT C

21

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 72 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..72
- (D) OTHER INFORMATION: /note= "HMPR-1a51 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

TACACACGTG GTCCACACC TACACCCCCC ACCCCACCCG GTGGTGGGCA AAATTCTCAA

60

CAAGACTATT TG

72

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 30 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..30
- (D) OTHER INFORMATION: /note= "MPR-1a31 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

TATCGAGCTC AATTAGTATG GACTTTCGCC

30

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 36 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..36
- (D) OTHER INFORMATION: /note= "MSARCO51 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

CACTCCTGCA GAGCCGGTTG GTTGAAAAAG ATTGGC

36

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 33 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..33
- (D) OTHER INFORMATION: /note= "MSARCO31 primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TTTCGAGCTC AATTAACCAC GTGCTGTAGC AGC

33

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 508 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..508
- (D) OTHER INFORMATION: /note= "tobacco PR-1a terminator"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

TTGAAACGAC CTACGTCCAT TTCACGTTAA TATGTATGGA TTGTTCTGCT TGATATCAAG	60
AACTTAAATA ATTGCTCTAA AAAGCAACTT AAAGTCAAGT ATATAGTAAT AGTACTATAT	120
TTGTAATCCT CTGAAGTGGA TCTATAAAAA GACCAAGTGG TCATAATTAA GGGGAAAAAT	180
ATGAGTTGAT GATCAGCTTG ATGTATGATC TGATATTATT ATGAACAGCG TTTTGTACTC	240
ATACGAATCA TGTGTTGATG GTCTAGCTAC TTGCGATATT ACGAGCAAAA TTCTTAACTA	300
CATGCCTTAG GAACAAGCTT ACACAGTTCA TATAATCTAC TAGAGGGCCA AAAACATGAA	360
AATTACCAAT TTAGATGGTA GGAGGATATT GAAAGTGGAG CAGCTAGTTT TAATAACTGA	420
CCGTTAGTCT TAAAATTGAC GGTATAAAAA TATTTACATA ATCAGGTCAT TTATAAGGTA	480
ATTATAGGTA AATATTTATG ACGAATTC	508

## (2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 36 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..36
- (D) OTHER INFORMATION: /note= "region of PR1a gene encoding 3' end of signal sequence and start of mature protein"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

TTATTCCTAG TAATATCCCA CTCTTGCCGT GCCCAA

36

## (2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 12 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS:
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

- (A) NAME/KEY: Region
- (B) LOCATION: 1..12
- (D) OTHER INFORMATION: /note= "amino acid sequence of region of PR1a gene encoding 3' end of signal sequence and start of mature protein"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Leu	Phe	Leu	Val	Ile	Ser	His	Ser	Lys	Arg	Ala	Glu
1				5					10		

## (2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 27 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..27
- (D) OTHER INFORMATION: /note= "region of sarcotoxin gene encoding C-terminal of mature peptide"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GCTGCTACAG CCAGAGGTTA ATTGAAA

27

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 6 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS:
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (ix) FEATURE:
  - (A) NAME/KEY: Region
  - (B) LOCATION: 1..6
  - (D) OTHER INFORMATION: /note= "C-terminal of mature sarcotoxin peptide"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Ala Ala Thr Ala Arg Gly  
1                    5

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 30 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (ix) FEATURE:
  - (A) NAME/KEY: -
  - (B) LOCATION: 1..30
  - (D) OTHER INFORMATION: /note= "region of PR1a gene encoding C-terminal of mature protein"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CCATACTAAT TGAAACGACC TACGTCCATT

30

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 45 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (ix) FEATURE:
  - (A) NAME/KEY: -
  - (B) LOCATION: 1..45
  - (D) OTHER INFORMATION: /note= "TPR1a51 from FIG. 3"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GCTGCTACAG CACGTGGTTA ATTGAGCTCG AAACGACCTA CGTCC

45

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..27
- (D) OTHER INFORMATION: /note= "region of sarcotoxin gene  
encoding N-terminal of mature peptide"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

GGTTGGTTGA AAAAGATTGG CAAAAAA

27

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Region
- (B) LOCATION: 1..9
- (D) OTHER INFORMATION: /note= "amino acid sequence of  
N-terminal region of sarcotoxin mature  
peptide"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Gly Trp Leu Lys Lys Ile Gly Lys Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 12 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..12
- (D) OTHER INFORMATION: /note= "amino acid sequence encoded by MSARCO51 primer"

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

His Ser Lys Arg Ala Gly Trp Leu Lys Lys Ile Gly  
 1                      5                      10

## (2) INFORMATION FOR SEQ ID NO:19:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (ix) FEATURE:

- (A) NAME/KEY: -
- (B) LOCATION: 1..24
- (D) OTHER INFORMATION: /note= "region of sarcotoxin gene encoding C-terminal of mature peptide"

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

GCTGCTACAG CCAGAGGTTA ATTG